

Application No. 09/345,289
Attorney Docket No. 04MV1073

REMARKS

Claims 1-11 are pending in the application, with Claims 1-11 having been amended. Reconsideration of the application is respectfully requested.

1. Claim Rejections under 35 U.S.C. § 112

Claim 1-5 are rejected under 35 U.S.C. § 112. Claims 1-5 have been amended to overcome the rejections.

2. Claim Rejections under 35 U.S.C. § 103(a)

Claims 1 - 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Iyengar et al (U.S. Patent No. 6,018,627) in view of Bray et al (document entitled "Extensible Markup Language (XML) 1.0") and in further view of Birsan et al (U.S. Patent No. 6,023,578).

Claim 1 is also rejected under 35 U.S.C. § 103(a) as being unpatentable over Crawley et al (document entitled "Type System Instantiation using Meta-Object Facility") in view of Birsan et al (U.S. Patent No. 6,023,578) and in further view of the document entitled "XML Metadata Interchange (XMI)" (herein referred to as "document XMI").

Claims 1 - 11 have been amended and new dependent claims 12 - 17 have been added to more clearly set forth and claim Applicant's invention. Support for the amendments and the new dependent claims can be found throughout the specification and drawings, and in particular, at page 5 line 30 through page 6 line 4, and at page 18 line 25 through page 20 line 6, and in FIG. 2, FIG. 3 and FIG. 5.

Applicant respectfully submits that Iyengar, Bray and Birsan, taken alone or in combination, do not teach, suggest or render obvious Applicant's invention, as set forth in amended independent Claims 1, 6 and 11 and their dependent claims.

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Although the three disciplines, namely, Unified Modeling Language ("UML"), Meta Object Facility ("MOF") and XML are known, the prior art has not taught or suggested on how to use them together to facilitate the transferring of data within models, from software tool to software tool, or from a tool to a repository in a distributed environment (specification, page 5 line 21-26).

Applicant's invention is a method that makes use of the above standards to facilitate data interchange between software tools and repositories that may be of different types (i.e., compliant to different standards). For example, in accordance to Applicant's invention, a model that is defined in UML can be converted to a meta-model defined in MOF to be registered and stored in a MOF-compliant repository, and XML Document Type Definitions (DTD) are generated for this particular meta-model. When this meta-model needs to be transmitted to a software tool or to another repository, a stream of data (that is, document) corresponding to this meta-model is generated based on the XML DTD, for the transmission (specification, page 5 line 30 through page 6 line 25). There is an exporter module for transmitting the stream of data and an importer module for receiving the stream of data (specification, page 8 lines 13-16, page 24 lines 22-25).

Iyengar et al (U.S. Patent No. 6,018,627) does not disclose the method of the present invention.

Bray discusses only the standard XML, which includes XML DTD.

Birsan (U.S. Patent No. 6,023,578) teaches the mapping of a computer program design created in the analysis environment to a data model in the object oriented environment (Birsan, column 5 lines 39-43). Birsan uses the term "imported" in "the determined relationship and the business class are then imported to the data model" to mean "conceptually mapping the determined relationship and the business class from the analysis

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environment to the data model in the object oriented environment" (Birsan, column 7 lines 6-11), and used the same term in "frameworks from the programming model have been imported into the analysis environment" to mean "element from the programming model has been loaded into the modeling tool" (Birsan, column 7 lines 1-6). These meanings of "import" are not the same as those of Applicant's "import" and "export", as defined in Applicant specification on page 24 lines 22-25, and as set forth in the amended claims.

Applicant also respectfully submits that Crawley, Birsan and document XMI, taken alone or in combination, do not teach, suggest or render obvious Applicant's invention, as set forth in amended independent Claims 1, 6 and 11 and their dependent claims.

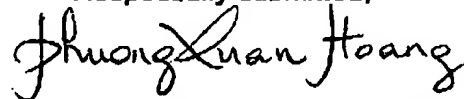
Crawley teaches MOF but does not teach how to use MOF in conjunction with XMI and UML to facilitate data interchange in a distributed environment, as taught by Application's invention.

In view of the amendments and remarks made above, it is respectfully submitted that pending Claims 1-17 are in condition for allowance. Reconsideration of the rejections is requested. Allowance of Claims 1-17 at an early date is solicited.

Applicant does not believe that there are any fees due as a result of this amendment. However, if there are any fees due, please charge the fees to Deposit Account No. 19-3790.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE:

IN THE CLAIMS:

1 1. (Amended) [In a computer system having at least one repository of a
2 first type and at least one software [modeling] tool of a second type coupled
3 together in a distributed heterogeneous environment, a] A method for
4 effecting data interchange [among] between a software tool[s] and a
5 repository [repositories in said environment], the software tool and the
6 repository being included in a computer system and coupled together in a
7 distributed heterogeneous environment

8 a. registering and storing [said] metadata describing a
9 meta[]-model in [said] the repository;

10 b. generating a set of rules [and streams of data based on
11 said rules] corresponding to the metadata;

12 c. generating [documents] a stream of data [conforming]
13 representing a document corresponding to [each of said] the meta-model[s]
14 [by reading said] based on the set of rules;

15 d. [writing an importer for use in importing into said]
16 transmitting from the repository [said] the stream[s] of data, using an exporter
17 module; and,

18 e. [writing an exporter for use in exporting] receiving at the
19 software tool [from said repository said] the transmitted stream[s] of data,
20 using an importer module.

1 2. (Amended) The [system] method as in Claim 1 wherein [said] the
2 repository [of a first type] is MOF-[based]compliant.

1 3. (Amended) The [system] method as in Claim 1 wherein [said] the
2 software tool [of a second type] is compliant to UML[-based] standard.

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1 4. (Amended) The [system] method as in Claim 1 wherein [said] the set
2 of rules [are] is XML Document Type Definitions corresponding to the
3 metadata.

1 5. (Amended) The [system] method as in Claim 1 wherein [said] the
2 stream[s] of data [are] conforms to XML Metadata Interchange standard.

1 6. (Amended) A storage medium encoded with machine-readable
2 computer program code for effecting data interchange among software tools
3 and repositories in a distributed heterogeneous environment, wherein, when
4 the computer program code is executed by a computer system having at least
5 one repository of a first type and at least one software tool of a second type,
6 the computer system performs the steps of:

7 a. registering and storing [said] metadata describing a
8 meta[]-model in [said] the repository;

9 b. generating a set of rules [and streams of data based on
10 said rules] corresponding to the metadata;

11 c. generating [documents] a steam of data [conforming]
12 corresponding to [each of said] the meta-model[s] [by reading said] based on
13 the set of rules;

14 d. [writing an importer for use in importing into said]
15 transmitting from the repository [said] the stream[s] of data, using an exporter
16 module; and,

17 e. [writing an exporter for use in exporting] receiving at the
18 software tool [from said repository said] the transmitted stream[s] of data,
19 using an importer module.

1 7. (Amended) The storage medium as in Claim 6 wherein [said] the
2 repository of a first type is MOF-based.

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1 8. (Amended) The storage medium as in Claim 6 wherein [said] the
2 software tool of a second type is UML-based.

1 9. (Amended) The storage medium as in Claim 6 wherein [said] the
2 rules are XML Document Type Definitions.

1 10. (Amended) The storage medium as in Claim 6 wherein [said] the
2 stream[s] of data [are] conforms to XML Metadata Interchange standard.

1 11. (Amended) [In a computer system having at least one MOF-based
2 repository and at least one UML-based software modeling tool coupled
3 together in a distributed heterogeneous environment, a] A method for
4 [effecting] facilitating data interchange [among software tools and repositories
5 in said environment by generating XML Document Type Definitions ("DTDs")
6 and XMI streams] in a computer system including a MOF-based repository,
7 [said] the method comprising the steps of:

8 a. registering and storing [said] metadata describing a UML-
9 based meta[]-model in [said] the MOF-based repository;

10 b. generating XML [DTDs] Document Type Definitions
11 corresponding to the metadata of [said] the UML-based meta-model; and

12 c. generating an [XML documents] XMI stream [conforming]
13 corresponding to [each of said] the UML-based meta-model[s] [by reading
14 said] using the XML [DTDs] Document Type Definitions [;].

15 [d. writing an importer for use in importing into said MOF-
16 based repository said XMI streams; and,]

17 [e. writing an exporter for use in exporting from said
18 repository said XMI streams.]

1 12. (New) The method of Claim 11 wherein the computer system includes
2 a software tool, the method further comprising:

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- 3 d. transmitting the XMI stream from the MOF-based repository to
4 the software tool, via an exporter module; and
5 e. receiving the XMI stream, at the software tool, via an importer
6 module.

1 13. (New) The method of Claim 11 wherein the computer system includes
2 a second repository, the method further comprising:

- 3 d. transmitting the XMI stream from the MOF-based repository to
4 the second repository, via an exporter module; and
5 e. receiving the XMI stream, at the second repository, via an
6 importer module.

1 14. (New) The method of Claim 13 wherein the second repository is
2 compliant to UML standard.

1 15. (New) The method of Claim 13 further comprising:

- 2 f. transforming the received XMI stream into corresponding
3 metadata, via the importer module; and
4 g. storing the corresponding metadata in the second repository.

1 16. (New) The method of Claim 15 further comprising:

- 2 h. transmitting a second XMI stream from the second repository to
3 the MOF-based repository, via a second exporter module; and
4 i. receiving the second XMI stream, at the MOF-based repository,
5 via a second importer module.

1 17. (New) The method of Claim 16 further comprising:

- 2 j. transforming the received second XMI stream into
3 corresponding metadata, via the second importer module; and
4 k. storing the corresponding metadata in the MOF-based
5 repository.